

Work Order ID 86008

86008

Page 1

June-19-12 2:22:12 PM

Item ID: D212-664-107

Accept

N9000040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Crosstube Low Standard Fwd

Start Date: 19/06/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 03/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: MLJ Date: 12/06/19

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D212-664-147

Rev B (DEO)

100

0.00

100

DOCUMENT CONTROL

DC

Document Control

Memo

Photocopy bluefile and create labels as per PPP D212-664-107
D6019-128 (ID = 2.125") = CHG 002
D6005-128 (ID = 2.000") = CHG 003

SCRAP

110

0.00

110

Packaging

Packaging

Memo

0.00

Packaging

120

0.00

120

BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D212-664-107 using CNC bender program 212-107

12-7-24

12-7-24

PTO

Dart Aerospace Ltd

W/O: 86008		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: DZ12-664-107 PAR #: Fault Category: X-tube NCR: Yes No DQA: Date: 12/08/13
 Resolution: Disposition: Scrap QA: N/C Closed: Date: 12/08/14

NCR: 12-1668		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
12-7-24	120	Middle overbent at prog. 5 (usually run up to 10) 1 side overbent at prog 4 (usually run up to 6 then check) Ran Second tube as per talio tube turned out perfect. RC; Process, NOTE; See attached TRN Deviation	<u>MS</u> 12/08/13 QSI 042	Scrap & Destroy	MO 12/8/17	JW 12-8-7	<u>MS</u> 12/08/13 QSI 042	<u>DAS</u> 16 8-83 12/08/13
		Ref; SA - SB - H -						

NOTE: Date & initial all entries

Work Order ID 86008***86008***

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Item ID: D212-664-107

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N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Low Standard Fwd

Start Date: 19/06/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 03/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: Date: Tooling: Date:

Run Start ***NR1***

QC: Date: SPC (Y/N): Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

130 QC15- Crosstube Dimensional Check

0.00

130

QC Memo

0.00

Quality Control

140 0.00

140

Crosstubes

Crosstubes

Memo 0.00

Crosstubes 1-Cut tube as per inspection dwg and deburr ends. ***ensure saw is square***

2-Position cuffs on tube ensure proper positioning

3-Drill tube as per dwg using DT8577 location #7 & # 212 ULF using jig
DT8548 and DT8549 as per QSI 10

4-Transfer drill rivet holes from cuff into tube.

5-Identify cuff position and Batch # on each and identify tube as per dwg D212-
664-107.

6- Inspect surface damage

7- Deburr and realodine cuff.

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

W/O:		WORK ORDER CHANGES					
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Start Date: 19/06/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 03/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	Outsource process - NDT per QSI038 4.1	0.00							
180									
Outsource2	Memo	0.00							
Outsource process - NDT	Liquid Penetrant Inspection as per QSI 038Or Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order								
190		0.00							
190	Packaging								
Packaging	Memo	0.00							
Packaging	Ensure copy of NDT results attached to work order.								
200	QC5- Inspect part completeness to step on W/O	0.00							
200									
QC	Memo	0.00							
Quality Control	Inspect for damage & ensure results are as per Dwg D212-664-107								

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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86008

June-19-12 2:22:13 PM

Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Item Name: Crosstube Low Standard Fwd

Start Date: 19/06/2012 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 03/07/2012 **Req'd Qty:** 1.00 *** 1 ***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run** **Start** ***NR1***
 QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop** ***NR2***

[illegible]

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Start Date: 19/06/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 03/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

220

0.00

220

SprayPaint

SprayPaint

Memo

0.00

Spray Painting

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: _____

Finish Time: _____

PAINT:

Start Time: _____

Finish Time: _____

230

QC14- Inspect Spray Paint

0.00

230

QC

Memo

0.00

Quality Control

Wrap in plastic bag to protect from scratches

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Work Order ID 86008***86008***

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Start Date: 19/06/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 03/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____

Tooling:

Date: _____

Run Start ***NR1***

QC: _____ Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

240

0.00

240

Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1- Assemble as per Dwg D212-664-147

1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper,
clean the area with 4105S wash 'n' wipe

2-Install supports with Proseal 890 per DSI9563 and QSI 015

A/R Proseal 890 Batch: _____

3- Torque bolts as per dwg

250

QC5- Inspect part completeness to step on W/O

0.00

250

QC

Memo

0.00

Quality Control

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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1

Cust Item ID:

Required Date: 03/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: Date:

Tooling: Date:

Run Start ***NR1***

QC: Date:

SPC (Y/N): Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
255	Pick Kit	0.00							
255									
Packaging	Memo	0.00							
Packaging									
260	QC4- 100% Inspect kits for completeness	0.00							
260									
QC	Memo	0.00							
Quality Control									
270		0.00							
270									
Packaging	Packaging								
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D212-664-107								

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Work Order ID 86008

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Revision ID:

Stop ***NS2***

Item Name: Crosstube Low Standard Fwd

Start Date: 19/06/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 03/07/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

280

QC21- Final Inspection - Work Order Release

0.00

280

QC

Memo

0.00

Quality Control

MLJ 12/08/08
closed at zero

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

June-19-12 2:22:16 PM

Work Order ID: 86008

Parent Item: D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

86008

D212-664-107

Start Date: 19/06/2012

Required Date: 03/07/2012

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A New Issue 07.09.12 EC verified by: JLM
 IPP Rev:B ECN 1100 08-01-11 DD verified by: EC
 IPP Rev:C Ecn 1121 08-02-25 DD Verified by:ec IPP Rev:D
 10.05.27 added pick kit DD verf:EC IPP Rev:E 11.10.17
 added SEQ 215 DD verf:EC IPP REV:F 11.11.03 as per
 chg003 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D212-664-107TRN		Manufactured	No			140	Each	0.0000	1	1			
D212-664-107TRN													
Crosstube Turning Detail													
D3659-1		Manufactured	No			220	Each	9.0000	2	2			
D3659-1													
CUFF													

Location	Loc Qty	Loc Code
ST482	9	
67005	1	
75173	1	
77032	7	

CR3212-4-06	Purchased	No				240	Each	202.0000	44	44			
CR3212-4-06													

CHERRY RIVET

Location	Loc Qty	Loc Code
ST330	149	
120521	149	
ST331	53	
112492	18	
112794	8	
119717	27	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Page 2

Work Order ID: 86008

86008

Parent Item: D212-664-107

D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 19/06/2012

Required Date: 03/07/2012

Start Qty: 1.00

Required Qty: 1.00

D3595-063-450

Manufactured No

240

Each

147.5095

4

4

D3595-063-450

RUBBER CUSHION

Location

Loc Qty

Loc Code

LG

27.7

82511

27.7

LG051

109.7

80161

1.7

84715

108

MAT052

10 109474

67353

2

68893

6

70113

0.56

71354

0.2

74113

0.349474

75597

1

MS21920-25

Purchased

No

240

Each

99.0000

4

4

MS21920-25

Clamp(per MIL-DTL-8783C)

Location

Loc Qty

Loc Code

LG050

67

116264

2

117998

4

118142

4

119339

2

119746

2

120475

7

120920

46

LG051

32

121583

32

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Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Picklist Print

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Work Order ID: 86008

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Parent Item: D212-664-107

D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 19/06/2012

Required Date: 03/07/2012

Start Qty: 1.00

Required Qty: 1.00

D2893-1

Manufactured No

240

Each

21 0000

2

2

D2893-1

**

2.75 Support

Location

Loc Qty

Loc Code

LG

9

83056

9

LG052

12

72865

2

80271

9

82228

1

D3428-1

Manufactured No

260

Each

35.0000

1

1

D3428-1

**

Placard

Location

Loc Qty

Loc Code

ST042

35

78933

2

81881

11

83582

10

85228

12

AN6-35A

Purchased No

260

Each

50.0000

4

4

AN6-35A

**

BOLT

Location

Loc Qty

Loc Code

342

50

121181

50

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Parent Item: D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

86008

D212-664-107

Start Date: 19/06/2012

Required Date: 03/07/2012

Start Qty: 1.00

Required Qty: 1.00

AN6-36A Purchased

No

260

Each

60.0000

4

4

AN6-36A
Bolt

**

Location

Loc Qty

Loc Code

ST342

60

118422

2

119449

1

120187

4

120423

53

MS21042L6 Purchased

No

260

Each

548.0000

6

6

MS21042L6
Nut

**

Location

Loc Qty

Loc Code

ST300

548

117677

25

118384

3

118927

48

119075

272

120308

200

AN960JD616 NAS1149D0663J Purchased

No

260

Each

0.0000

18

18

AN960JD616
Washer

**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

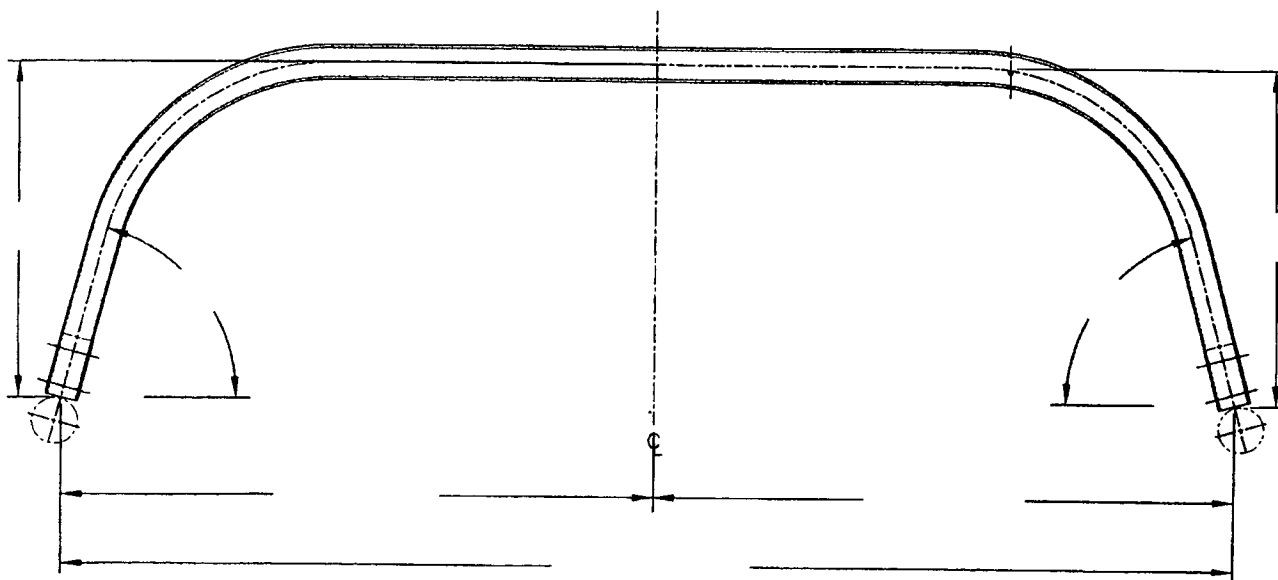
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	86008
Description: Crosstube Low Fwd (205/212/412)		Part Number:	D212-664-107
Inspection Dwg: D212-664-147 Rev: B		Page 1 of 1	

Required Dimension	Min	Max
Height	20.79	21.05
1/2 Span	48.55	48.81
Angle	49	52
Total Span	97.1	97.62
Bending Passes	8	--
Crushing	--	6% / 10%



	Side A	Side B
Bending Passes		
Crushing		
Comments		

QC15 Inspection	
Date	

Rev	Date	Change	Revised by	Approved
A	08.02.29	New Issue	KJ/JM	
B	10.01.21	Dwg Rev updated	KJ	
C	12.04.16	Added bending, crushing dimensions	KJ	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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NOTE: Date & initial all entries

Item	Qty -147	Qty -147B	Part Number	Description
1	X		D212-664-147	CROSSTUBE ASSEMBLY (205/212/412 LOW FWD)
2		X	D212-664-147B	CROSSTUBE ASSEMBLY (214 LOW FWD)
3	1	1	D6019-128	CROSSTUBE
4	2	2	D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	2	2	D3659-1	CUFF
7	4	4	MS21920-25	CLAMP (OR MS21920-26)
8	44	44	CR3212-4-06	RIVET (OR M7885/3-4-06)
9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
10	A/R	A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

GENERAL NOTES:

- 1) MATERIAL MANUFACTURED FROM D6019-128
FINISHED LENGTH = 126.528±0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH. CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES. 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF
USING VIBRATING STYLUS.
- 7) WEIGHT D212-664-147 = 24.2 lbs (PER IIN-D212-664)
D212-664-147B = 24.2 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) WHEN MACHINING TAPER, RUN CUTTER OFF PART BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD
BE SMOOTH
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6%
BASED ON O.D. EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038
- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF
D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER
INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1
SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE
SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS
DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE
UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS
NOT BOTTOMED-OUT AFTER TORQUING
- 16) INSTALL D3659-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF
SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE
SEAL EDGE OF CUFF TO ENSURE NO GAPS
- 17) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO 86008 MJS
12/06/19

DEO ATTACHED

Per ECN#1164
11/07/20
UNDER REVIEW
12/06/19

RELEASED
2009-10-29

B	REVISE GENERAL NOTES/PART LIST: UPDATE TO CURRENT STANDARDS: ADD -147B (ZN C4-2, D4-2)	RF	09.09.30
A	NEW ISSUE	CP	07.07.07
REV.	DESCRIPTION	BY	DATE
DESIGN	RF		
DRAWN	RF		
CHECKED	RF		
MFG. APPR.	RF		
APPROVED	RF		
DE APPR.	RF		
DATE	09.09.30		

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. REV. B
D212-664-147 SHEET 1 OF 4

TITLE SCALE
CROSSTUBE (205/212/412 LOW FWD) NTS

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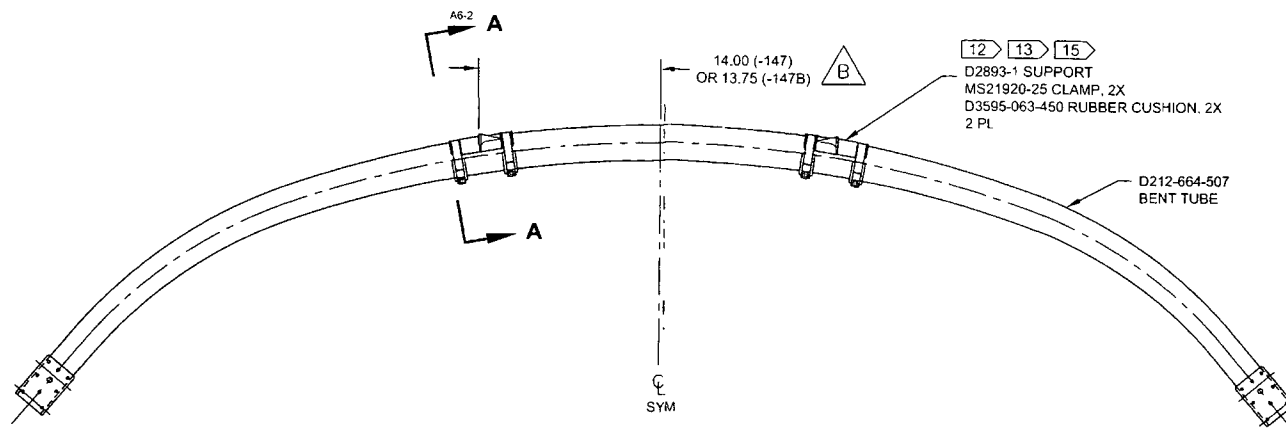
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

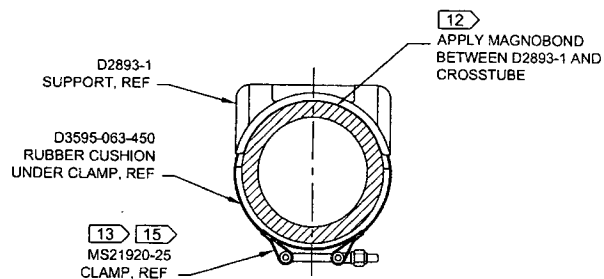
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



D212-664-147/-147B
ASSEMBLY DETAIL



SECTION A-A DS-2
SCALE 4X

86008

DEO ATTACHED

ECU#11-614
K.07.20
UNDER REVIEW
CP 11.06.13

RELEASED
2009-10-29

DESIGN	97	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	97	DRAWING NO.	REV. B
MFG. APPR.	12	D212-664-147	SHEET 2 OF 4
APPROVED	12	TITLE	SCALE
DE APPR.	12	CROSSTUBE (205/212/412 LOW FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2007 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

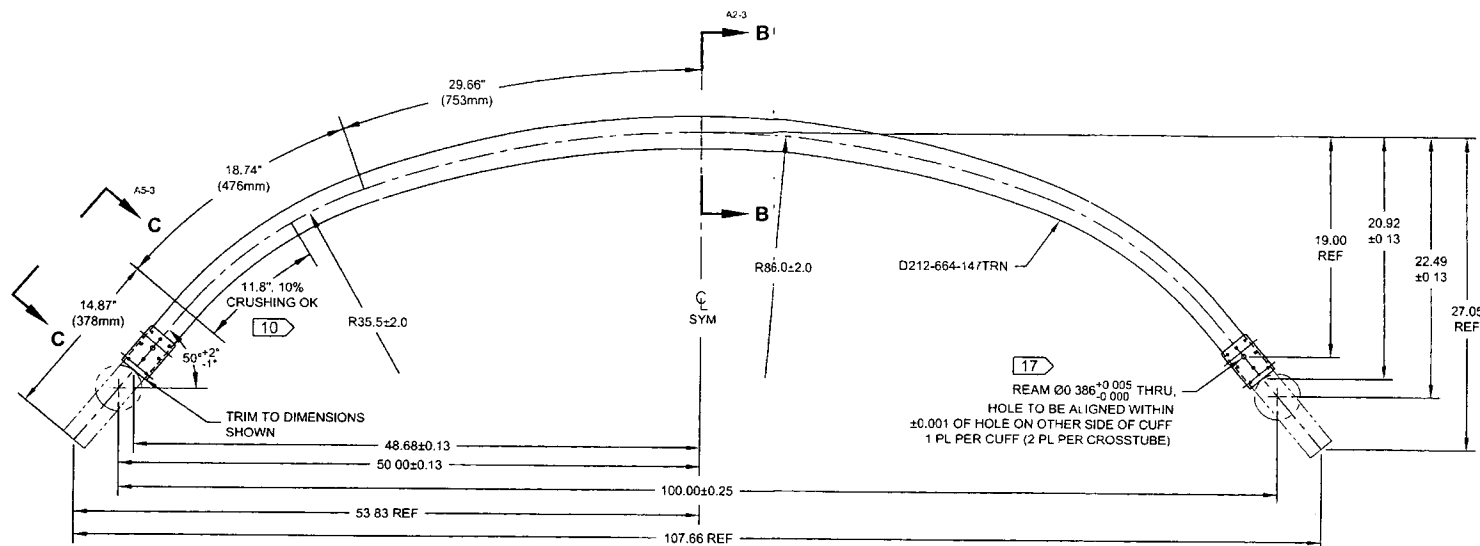
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

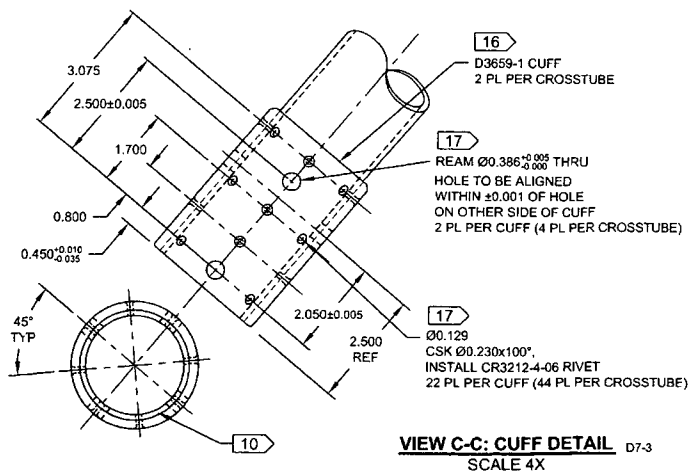
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

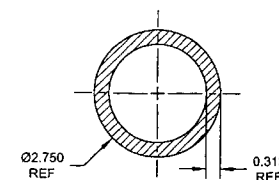
NOTE: Date & initial all entries



D212-664-507
BENDING AND DRILLING DETAIL 10 B



VIEW C-C: CUFF DETAIL D7-3
 SCALE 4X



SECTION B-B D5-3
 SCALE 4X

2011-614
 09-20
UNDER REVIEW
 09/24/13

RELEASED
 2009-10-29

DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. B
MFG. APPR.	RF	D212-664-147	SHEET 3 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE (205/212/412 LOW FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2007 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED IN ANY MANNER WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

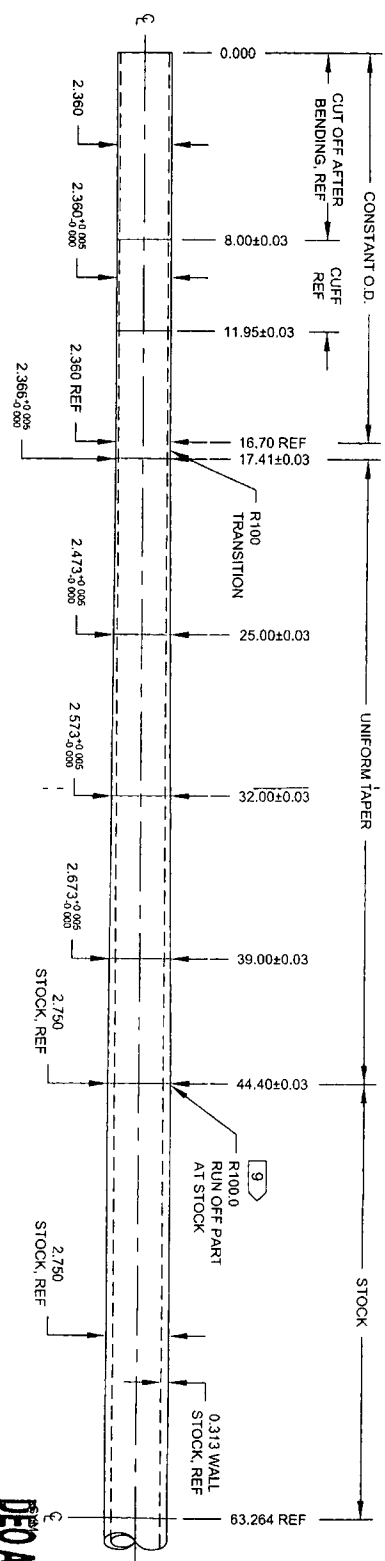
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



D212-664-147TRN
TURNING DETAIL

DESIGN	40	DART AEROSPACE LTD
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA
CHECKED	40	DRAWING NO.
MFG. APPR.	40	D212-664-147
APPROVED	40	REV. B
DE APPR.	40	SHEET 4 OF 4
DATE	09.09.30	TITLE
		CROSTUBE (205/212/412 LOW FWD)
		SCALE
		NTS

RELEASED
2009-10-29

UNDER REVIEW
11.07.26
11.06.13

DETO ATTACHED

26008

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DRAWING NO. D212-664-147	TITLE CROSSTUBE ASS'Y (205 LOW FWD)	REV. B	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D212-664-147-B-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>qp</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>18</i>	APPROVED <i>MP</i>		DE APPR. <i>MP</i>		
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21		DATE 11.07.21		

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

Item	Qty -147	Qty -147B	Part Number	Description
9	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2893-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28
WV

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Dart Aerospace Ltd

WORK ORDER CHANGES

W/O: 86052

PROCEDURE CHANGE

By Date Qty Approval Chief Eng / Prod Mgr Approval QC Inspector

REFERENCE ONLY

COPY

+ Luke

Part No: D212-664-107TRN PAR #:

Fault Category: workmanship

NCR: Yes ☒ No ☒

DQA: initial

Date: 12/07/24

Disposition: use as is

QA: N/C Closed: CK

Date: 12/2/24

Resolution:

WORK ORDER NON-CONFORMANCE (NCR)

NCR: 12-1610		Description of NC Section A	Corrective Action Section B		Sign & Date	Verification Section C	Approval Chief Eng	Approval QC Inspector
DATE	STEP		Initial Chief Eng	Action Description Chief Eng				
12/7/23	100	OVERALL CUT LENGTH TOO SHORT = 126.41 2 L. operate and	GP 12.10.23	Acceptable. Cuff is trimmed after banding so no effect on part	KE 12-7-24	12-7-24	GP 12/7/23	DAS 16 8-23 12/6/24

NOTE: Date & initial all entries

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: _____ Date: _____

QA Closed: _____ Date: _____

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>	AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube <input type="checkbox"/></td> <td>Crosstube <input type="checkbox"/></td> <td>Water Jet <input type="checkbox"/></td> <td>Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>															
Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>															
Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>															
Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>																

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data									
Equip/Tooling									
Operator									
Material									
Setup									
Other									
Process									
Supplier									
Training									
Unapproved									

FAULT CATEGORY

Landing Gear <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	General <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions
		<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge
		<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other